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NEOTYPIFICATION OF *TRIFOLIUM PSORALIOIDES* WALTER (FABACEAE) AND ITS TRANSFER TO *ORBEXILUM*

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ABSTRACT

Trifolium psoralioides was described by Walter in 1788 in his *Flora Caroliniana*. This taxon has been treated as a member of several genera, including *Lotodes, Melilotus*, and *Psoralea*. The name now belongs in *Orbexilum*. A nomenclatural history of the eastern USA coastal plain taxon is presented, as well as a history of how the name has been applied in floras. A case is made for the need to transfer the name to *Orbexilum*, the combination is proposed, and a neotype is established for the name.

Thomas Walter (?1740–1789), an English planter and merchant, lived in what is now Berkeley County, South Carolina, on a plantation along the banks of the Santee River (Rembert 1980). Walter (1788) authored the first flora in North America based on the Linnean System, the *Flora Caroliniana*. In this book, Walter coined 414 names for plants he thought to be new (Ward 2007a). Specimens in a folio housed at the Natural History Museum, London (BM), donated by the family of John Fraser to that institution have long been called the "Walter Herbarium," and, indeed, some specimens bear names in the hand of Thomas Walter. Some specimens from this folio have been designated lectotypes or neotypes for some of Walter's names (see, for example, designations by Fernald & Schubert 1948 and Ward 2007a, b, c, d, e, f). Ward (2007c) indicated that the "Walter Herbarium" is better called the "Fraser Herbarium," since it appears that specimens contained therein were likely collected by John Fraser. Other names published in the *Flora Caroliniana* are not represented by specimens (or adequate specimens) in that folio and have been neotypified (or epitypified) by other specimens (see Ward 2007b, d).

One name published by Walter in *Flora Caroliniana*, *Trifolium psoralioides*, is not typified by a specimen. The name has been applied in different ways by different authors (Table 1), and this has led to confusion about how the name should be applied (see Table 2 for ways in which this entity has been treated since 1788). The species has long been considered a member of the genus *Psoralea* and is now considered to belong in *Orbexilum*. At the rank of species, it has been considered by some authors as a synonym of *Psoralea pedunculata* (Mill.) Vail (basionym = *Hedysarum pedunculatum* Mill. 1768) or *Orbexilum pedunculatum* (Mill.) Rydb. If considered in this way, there are no nomenclatural problems resulting from the lack of a type specimen. At the rank of variety, the taxon would be a synonym of *Psoralea melilotoides* var. *gracilis* Torr. & A. Gray (1838), and again, no problems result from lack of a type if it is treated in this way. However, some authors have treated the eastern coastal plain entity as a separate species from the inland entity (Cory 1938; Rydberg 1919; Turner 2008). Indeed, there is evidence from both morphology (densely glandular calyces, bracts, and fruits, and other traits) and molecular data (Egan & Crandall 2008) to support recognition of the coastal plain entity as a separate species from the inland entity. If this is accepted, then typification of Walter's name becomes crucial, since it predates *Orbexilum gracile* (Torr. & A. Gray) Rydb. by over 130 years.

In his monograph of *Psoraleeae,* Grimes (1990) recognized two varieties of *Orbexilum pedunculatum*: var. *pedunculatum*, with abaxial leaflet surfaces, calyx tube, and fruits eglandular; and var. *gracile*, with abaxial leaflet surfaces, calyx tubes, and fruits glandular. In this monograph, Grimes lectotypified *Hedysarum pedunculatum* Mill. using a stem on a sheet in the Miller herbarium (BM) that matches the characters given above and stabilizes the Miller name. Grimes rejected *Trifolium psoralioides* as being ambiguous. However, this does nothing to truly deal with that name, which now becomes important. I believe that neotypifying the Walter name is the most parsimonious approach and brings the most nomenclatural stability to a very complex situation.

In order to determine an appropriate specimen to serve as a new type specimen, it is important to consider several points:

1. Thomas Walter did not designate type specimens for his taxa.
2. Walter's original material (if any) is mostly lost, though perhaps a small number of specimens he actually examined still exist in the "Walter/Fraser Herbarium" folio at BM (and photos of them at GH).
3. Walter did not stray far from home during the time he lived in the Carolinas (perhaps no more than 50 miles (Walter 1788).
4. The taxon now called "*gracile*" is the only one (at least now) native to the region in which Walter lived.
5. Walter's brief protolog is consistent with a description of the entity now called "*gracile.*"

It seems obvious, to me at least, that *Trifolium psoralioides* Walt. is the same taxon as *Orbexilum pedunculatum* var. *gracile*. Therefore, in order to stabilize the nomenclature of the eastern USA coastal plain species of *Orbexilum*, a new combination is proposed here, with designation of a neotype.

Orbexilum psoralioides (Walt.) Vincent, **comb. nov.** *Trifolium psoralioides* Walt., Fl. Carol. 184. 1788. *Melilotus psoralioides* (Walt.) Nutt., Gen. N. Amer. Pl. 2: 104–105. 1818. *Lotodes psoralioides* (Walt.) Kuntze, Revis. Gen. Pl. 1: 194. 1891. *Orbexilum pedunculatum* var. *psoralioides* (Walt.) Isely, Sida 13(1): 122. 1988. *Psoralea melilotoides* Michx. (*nom. superfl.*), Fl. Bor.-Amer. 2: 58. 1803. *Psoralea psoralioides* (Walt.) Cory, Rhodora 38(455): 406. 1936. **NEOTYPE** (designated here): **South Carolina**. Berkeley Co.: Francis Marion National Forest, 3.47 airmiles ESE of Honey Hill, 7 Jun 2012, *J.B. Nelson 30632 with E. Kauffman* (USCH 112017). Figure 1.

Orbexilum pedunculatum var. *gracile* (Torr. & A. Gray) J.W. Grimes, Mem. New York Bot. Gard. 61: 47. 1990. *Psoralea melilotoides* (Michx.) Torr. & A. Gray ß *gracilis* Torr. & A. Gray, Fl. N. Amer. 1(2): 303. 1838. *Orbexilum gracile* (Torr. & A. Gray) Rydb., N. Amer. Fl. 24(1): 7. 1919. *Orbexilum gracile* (Torr. & A. Gray) B.L. Turner (*nom. illeg.*), Lundellia 11: 2. 2008. *Psoralea psoralioides* var. *gracilis* (Torr. & A. Gray) F.L. Freeman, Rhodora 39(467): 427. 1937. **TYPE**: "Pine woods, Middle Florida, *s.d., Dr. Chapman s.n.* (holotype: NY ![electronic image]).

A.C. Moore Herbarium
University of South Carolina
112017
NEOTYPE
Trifolium psoralioides Walter
Flora Caroliniana 184 (1788)
= Orbexilum psoralioides (Walter) Vincent
Det.: Michael A. Vincent (MU) 2014
PLANTS OF SOUTH CAROLINA, U.S.A.
ORBEXILUM PEDUNCULATUM (Miller) Rydb.
Fabaceae
BERKELEY COUNTY: Abundant and widely scattered in patches, or in isolated clumps, with Rhynchospora globularis, Panicum virgatum, Cirsium horridulum, Vernonia acaulis, Rhus copallina, within relatively high-quality longleaf-pine savanna, west side of Forest Service Rd 212B and 0.79 mile north of its southern terminus; Francis Marion National Forest, 3.47 air miles east-southeast of Honey Hill; 33.1756°N -79.5159°W. 14' elev.
John B. Nelson 30632
with E. Kauffman
7 VI 2012
A. C. Moore Herbarium (USCH)
University of South Carolina
Purchase of this paper was made possible by a generous donation from the Lexington County Master Gardeners Association.
mounted June 2012

Figure 1. Neotype specimen of *Trifolium psoralioides* Walt., *Nelson 30632* (USCH).

Table 1. Nomenclatural history of the coastal plain glandular *Orbexilum*

Author	Date	Name
Walter	1788	*Trifolium psoralioides* Walt.
Michaux	1803	*Psoralea melilotoides* Michx.[1]
Nuttall	1818	*Melilotus psoralioides* (Walt.) Nutt.
Torrey & Gray	1838	*Psoralea melilotoides* (Michx.) Torr. & A. Gray ß *gracilis* Torr. & A. Gray[2]
Torrey & Gray	1838	*Psoralea gracilis* Chapm. ex Torr. & A. Gray[3]
Kuntze	1891	*Lotodes psoralioides* (Walt.) Kuntze[4]
Vail	1894	*Psoralea pedunculata* (Mill.) Vail
Rydberg	1919	*Orbexilum gracile* (Torr. & A. Gray) Rydb.[5]
Cory	1936	*Psoralea psoralioides* (Walt.) Cory
Freeman	1937	*Psoralea psoralioides* (Walt.) Cory var. *typica* Freeman[6]
Freeman	1937	*Psoralea psoralioides* var. *gracilis* (Torr. & A. Gray) Freeman
Isely	1986	synonymized *T. psoralioides* with *Orbexilum pedunculatum* var. *pedunculatum*
Isely	1988	*Orbexilum pedunculatum* var. *psoralioides* (Walt.) Isely[7]
Grimes	1990	*Orbexilum pedunculatum* var. *gracile* (Torr. & A. Gray) Grimes
Turner	2008	*Orbexilum gracile* (Torr. & A. Gray) B.L. Turner[8]

[1] *nom. superfl.* (cites *Trifolium psoralioides* Walt. in synonymy)
[2] attributed to Chapman, based on an unpublished manuscript name
[3] *nom. nud.*
[4] as "psoralodes"
[5] as "(Chapm.) Rydb."
[6] *nom. illeg.*, ICBN Art. 24.3
[7] as "(Chapm.) Isely", but Isely gives the correct basionym and author
[8] invalid; isonym

Table 2. Historical treatment of coastal glandular *Orbexilum* in floras

Author	Date	Treated as:	*psoralioides* mentioned?
Elliott	1824	*Psoralea melilotoides*	as synonym
Gray	1887	*Psoralea melilotoides*	no
Britton & Brown	1897	*Psoralea pedunculata*	no
Small	1903	*Psoralea gracilis*	no
Robinson & Fernald	1908	*Psoralea pedunculata*	no
Small	1913	*Psoralea gracilis*	no
Small	1933	*Orbexilum gracile*	no
Massey	1961	*Psoralea psoralioides*	
Wilbur	1963	*Psoralea psoralioides* var. *psoralioides*	
Radford et al.	1964	*Psoralea psoralioides* var. *psoralioides*	
Harvill	1970	*Psoralea psoralioides*	
Duncan & Kartesz	1981	*Psoralea psoralioides* var. *psoralioides* and var. *gracilis*	
Isely	1990	*Orbexilum pedunculatum* var. *gracile*	yes
Gleason & Cronquist	1991	*Orbexilum pedunculatum* var. *gracile*	yes
Harvill et al.	1992	*Psoralea psoralioides*	
Isely	1998	*Orbexilum pedunculatum* var. *gracile*	yes
Wunderlin	1998	*Orbexilum pedunculatum*	yes
Weakley et al.	2012	*Orbexilum pedunculatum* var. *psoralioides*	

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John Nelson, curator of USCH, graciously provided a loan of the neotype specimen. Staff at GH searched the photographs of the BM "Walter herbarium" for a specimen of *Trifolium psoralioides* and found none. Dan Ward offered helpful insights about Thomas Walter and his names and specimens associated with them.

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